

**AMENDMENTS TO THE CLAIMS**

1. (Currently amended) A laser detecting and ranging apparatus, comprising
  - a light transmitting unit for transmitting a light signal from a light source as a transmitted beam into the atmosphere,
  - a light receiving unit for receiving a light beam from the atmosphere as a received light,
  - an oscillator for outputting a modulating signal having at least one modulating frequency as a carrier frequency, and
  - a signal processing unit for detecting properties of said atmosphere on the basis of said received light,
  - ~~characterized in that~~ wherein said light transmitting unit includes a light intensity modulator for performing intensity modulation on the light signal from said light source with said modulating signal, and that
  - said signal receiving means includes
  - optical frequency conversion means for converting the frequency of the intensity-modulated component of said received light to a base-band frequency, and
  - optical detection means for directly detecting an output signal from said optical
  - frequency conversion means to thereby convert into an electric signal to be subsequently inputted to said signal processing unit.

2. (Currently amended) A laser detecting and ranging apparatus set forth in claim 1, ~~characterized in that~~ wherein said optical frequency conversion means is constituted by an optical mixer, and

that said optical mixer is designed to modulate intensity of said received light with a modulating frequency which approximately equal to a carrier frequency of said modulating signal.

3. (Currently amended) A laser detecting and ranging apparatus set forth in claim 2, ~~characterized in that~~ wherein said optical mixer includes a light intensity modulator for modulating at least one of phase, polarization and amplitude of said received light with a modulating frequency which is approximately equal to a carrier frequency of said modulating signal.